added to co-culture of PBMC and colorectal cancer (colorectal adenocarcinoma) cell line.

[0046] FIG. **9**F and FIG. **9**G are graphs showing PD-1 receptor occupancy on CD8+ T cells and IFN-γ production respectively when anti-PD-1-TGFRII fusion protein is added to co-culture of PBMC and head and neck cancer (pharyngeal carcinoma) cell line.

[0047] FIG. **9**H and FIG. **9**I are graphs depicting TGF-β1 and TGF-β2 concentration respectively in supernatant of PBMC and colorectal cancer (colorectal adenocarcinoma) cells co-culture in presence of anti-PD-1-TGFRII fusion protein.

[0048] FIG. **9**J and FIG. **9**K are graphs depicting TGF-β1 and TGF-β2 concentration respectively in supernatant of PBCM and head and neck cancer (pharyngeal carcinoma) cells co-culture in presence of anti-PD-1-TGFRII fusion protein.

[0049] FIG. **9**L and FIG. **9**M are graphs depicting IFN-γ production respectively in 3D spheroid culture of colorectal cancer (colorectal adenocarcinoma) cells or head & neck cancer (pharyngeal carcinoma) cells and PBMC in presence of anti-PD-1-TGFRII fusion protein as compared to anti-PD-1 alone.

[0050] FIGS. **10**A-**10**D show effect of anti-PD-1-TGFRII fusion protein treatment on T cell proliferation and activation in the presence of recombinant TGF-β1.

[0051] FIGS. **11**A-**11**F show expression of various cytokines by PBMC in the presence recombinant TGF-β1 and in the presence of anti-PD-1, anti-PD-1-TGFRII fusion protein or control antibodies.

[0052] FIG. **12**A shows the effect of anti-PD-1-TGFRII fusion protein on tumor growth as compared to anti-PD-1 alone in a humanized mouse model of colorectal cancer.

[0053] FIG. **12**B shows that treatment with anti-PD-1-TGFRII fusion protein significantly increases $CD8^+$ T cell to T_{reg} ratio in tumor in a humanized mouse model of colorectal cancer.

[0054] FIG. **12**C shows the effect of anti-PD-1-TGFRII fusion protein treatment on perforin expression levels as compared to anti-PD-1 treatment in a humanized mouse model of colorectal cancer.

[0055] FIG. **12**D and FIG. **12**E shows the effect of anti-PD-1-TGFRII fusion protein treatment on TGF-β1 and TGF-β2 concentrations as compared to anti-PD-1 treatment respectively in a humanized mouse model of colorectal cancer.

[0056] FIG. **13**A shows treatment with anti-PD-1-TGFRII fusion protein significantly improved IFNγ production compared to anti-PD-1 treatment in an in vitro model of head and neck cancer. FIGS. **13**B-**13**G show treatment with anti-PD-1-TGFRII fusion protein significantly increases T-cell function as evidenced by expression analysis of various pathway genes.

[0057] FIG. **14**A shows the effect of anti-PD-1-TGFRII fusion protein on tumor growth as compared to anti-PD-1 alone in a humanized mouse model of head and neck cancer.

[0058] FIG. **14**B shows survival of tumor bearing mice in humanized mouse model of head and neck cancer when treated with anti-PD-1-TGFRII fusion protein vs. anti-PD-1 alone or isotype control.

[0059] FIG. **14**C shows ratio of $CD8^+$ T cells to regulatory T cells in tumors of mice treated with anti-PD-1-TGFRII fusion protein in a humanized mouse model of head and neck cancer.

[0060] FIG. **14**D and FIG. **14**E shows the effect of anti-PD-1-TGFRII fusion protein on TGF-β1 and TGF-β2 concentrations as compared to anti-PD-1 alone in a humanized mouse model of head and neck cancer.

[0061] FIG. **14**F shows the effect of anti-PD-1-TGFRII fusion protein on IFN-γ production in a humanized mouse model of head and neck cancer.

[0062] FIGS. **15**A-**15**B shows the effect of anti-PD-1 (VH7/VL6)-TGFRII fusion protein on IFN-γ production and TGF-β1 concentration in primary colorectal cancer patient samples.

[0063] FIG. **15**C shows the gene expression analysis of primary colorectal cancer patient samples co-cultured with anti-PD-1(VH7/VL6)-TGFRII fusion protein.

[0064] FIG. **16** shows a graph depicting the results of a cytotoxicity assay of anti-PD-1 (VH7/VL6)-TGFRII fusion protein compared to anti-PD-L1-TGFRII fusion protein.

[0065] FIG. **17** is a graph depicting the results of a cytotoxicity assay of anti-PD-1(VH7/VL6)-TGFRII fusion protein in combination with a chimeric receptor antigen (CAR) T cells vs. anti-PD-1 in combination with a CAR T cells vs. CAR T cells alone.

[0066] FIG. **18**A and FIG. **18**B are graphs depicting the results of a cytotoxicity assay of anti-PD-1 (VH6/VL5)-TGFRII fusion protein in combination with CD33 CAR-T and a cytotoxicity assay of anti-PD-1 (VH7/VL6)-TGFRII fusion protein in combination with CD33 CAR-T respectively.

[0067] FIG. **19**A and FIG. **19**B are graphs depicting tumor cell lysis using anti-PD-1 (VH6/VL5)-TGFRII fusion protein and anti-PD-1 (VH7/VL6)-TGFRII fusion protein respectively when co-cultured with NK cells.

[0068] FIG. **20** is a graph depicting Biacore analysis of simultaneous binding of TGF-b1 and PD-1 by anti-PD-1 (VH6/VL5)-TGFRII fusion proteins using different linkers.

[0069] FIG. **21** is a graph showing blockade of PD-1/PD-L1 interaction by anti-PD-1 IgG4-ADA2.

[0070] FIG. **22** is a graph showing ADA2 enzymatic activity measured for anti-PD-1 hIgG1-ADA2 and anti-PD-1 hIgG4-ADA2.

[0071] FIGS. **23**A-**23**C are graphs showing the effect of various variants of anti-PD-1 and anti-PD-1-ADA2 fusion proteins on PD-L1/PD-1 interaction.

[0072] FIGS. **24**A-**24**F are graphs showing the enzymatic activity of various variants of anti-PD-1-ADA2 fusion proteins as measured by ADA enzymatic activity.

[0073] FIG. **25** is a graph showing the enzymatic activity of anti-PD-1-mutADA2 vs. anti-PD-1-wtADA2 as measured by ADA enzymatic activity.

[0074] FIG. **26**A-**26**D are graphs depicting the effect of variants of anti-PD-1-wtADA2 on T cell proliferation.

[0075] FIG. **26**E is a graph depicting IFNγ production by anti-PD-1-wtADA2 as compared to anti-PD-1 or isotype control.

[0076] FIGS. **27**A-**27**B are graphs depicting the effectiveness of wtADA2 and mutADA2 to reverse adenosine-mediated suppression of T cell proliferation.

[0077] FIG. **28** is a graph depicting the effect of variants of anti-PD-1-ADA2 fusion proteins on the blockade of PD-1-PDL1 interaction.

[0078] FIG. **29** a graph showing the enzymatic activity of anti-PD-1-ADA2-scFv-Fc as measured by ADA enzymatic activity.